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ABSTRACT

This handbook presents instructions for implementing a confidence testing program in technical training situations, identification of possible areas of application, techniques for evaluating confidence information, advantages and disadvantages of confidence testing, time considerations, and problem areas. Complete instructions for "Pick-One" and "Distribute 100 Points" confidence testing methods are given for testing supervisors and examinees for both hand and computer scoring. (MS)

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USER'S HANDBOOK FOR CONFIDENCE TESTING AS A DIAGNOSTIC AID IN TECHNICAL TRAINING

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U.S. DEPARTMENT OF HEALTH,
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FOREWORD

This work was completed under Project 1121, Technical Training Development, Task 112103, Evaluating Individual Proficiency and Technical Training Programs. Dr. Marty R. Rockway was the Project Scientist and Capt. Wayne S. Sellman was the Task Scientist.

This handbook was developed under the provisions of Contract F41-609-70-C-0044 by the Educational Testing Service, Princeton, New Jersey. Project monitor was Capt. Wayne S. Sellman. This handbook is intended for both testing specialists and general users of tests. It is intended to supply the user with a set of instructions for implementing a program of confidence testing in technical training situations, provide information concerning such factors as the identification of promising areas of application, the relative value and ease of alternative scoring methods, techniques for evaluating confidence information, and administrative considerations.

This handbook contains sections discussing the Pick-One and Distribute 100 Points confidence formats, other confidence procedures and the relative merits of each method, selection and confidence test scale scores, uses of confidence testing, the advantages and disadvantages of confidence testing, and instructions for those administering confidence tests where either hand scoring or machine scoring is being used.

It should be noted that this handbook is not directive or regulatory in nature, but is intended only as a source of information to potential confidence testers concerning how to apply the technique within their testing programs.

This report has been reviewed and is approved.

GEORGE K. PATTERSON, Colonel USAF
Commander
Air Force Human Resources Laboratory

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SECTION I

Overview of Confidence Testing

Introduction

When a student takes a test, one question usually arising is the extent to which that student's score is a true indication of his ability. Oftentimes when he is given another test of similar content or the same test at a different time, he will obtain a different score due in part to irrelevant and, hopefully, minor variations in the measurement instruments and processes. Most testing specialists try to minimize these errors of measurement, especially those attributable to the occurrance of guessing.

As an example of how guessing creates error, suppose the question is asked, "What is the capital of North Carolina?" The alternatives given are:

(a) Charlotte (b) Winston-Salem (c) Raleigh (d) Greensboro

Four students, Adams, Johnson, Washington, and Wilson answer the question like this: Adams and Washington both say (c) is correct, Johnson says (b) is right, while Wilson marks (a) as being the answer. From the answers just given to the multiple choice, we could say that Adams and Washington both know the same amount and each knows more about the question than either Johnson or Wilson.

Suppose in reality Washington did know the answer to the question and knew the other answers were all wrong. Adams, on the other hand, did not know which answer was right and guessed at (c), being unable to eliminate any of the other answers as possibilities. Wilson knew that it was either (a) or (c) but could not make up his mind. He knew (b) and (d) were wrong and guessed at (a) over (c). Johnson was sure that (d) was the right answer and all the others were wrong. This additional information of the four students' confidence in their answers gives a better insight into the students' knowledge of the subject tested. For example, Washington is right and confident and should be rewarded more than Adams who only answered correctly because he guessed correctly. Johnson also is sure he's right, but is in fact wrong, and should be both strongly penalized and given extra training. The uncertainty of Adams and Wilson probably indicates a need for some remedial work and merits neither strong reward nor penalty. Methods developed during the past years for providing more information from each item in a test by asking the examinee to indicate his confidence in some way are called "confidence tests". Confidence testing provides information that helps identify who guesses completely, who can eliminate some of the answers, and who is sure of his answer.

This Handbook is intended for test users as an aid in implementing confidence testing procedures in technical training settings. In addition to describing such methods, this Handbook discusses the possible areas of

application, the advantages and disadvantages of confidence testing, time considerations, and problem areas. In addition, two methods are recommended termed "Pick-One" confidence testing and "Distribute 100 Points" confidence testing with complete instructions for testing supervisors and examinees in cases where scoring is accomplished by hand and by computer.

Pick-One Confidence Testing

When using the Pick-One confidence testing format the student is first asked to pick the answer he thinks is correct and then mark how confident he is that the answer he has chosen is, in fact, correct. The degree of confidence he expresses will be described in words, and the score he will receive if he is right or wrong will be given so that he knows the consequence of his responses. These scores are developed so the student will score highest if he gives an accurate estimate of his degree of certainty.

A scoring table for a four-alternative item follows along with four examples. The score received depends on whether the answer the examinee gives is correct and the amount of confidence assigned to his choice. For example, if the examinee picks the correct answer and indicates Very Sure, he receives 10 points. Had he been wrong, he would have been penalized 17 points.

Scoring Table for Four-Alternative Pick-One Confidence Testing

	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0

Example 1

Chicago is a

(a) state
(B) city
(C) country
(D) village

Answer: B

Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
☒	☐	☐	☐	☐

In the above example the subject was very sure, certain in fact, that the answer he marked was correct. He received 10 points for this answer since it is correct.

Example 2

	Answer	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
Which town is not in Nebraska?						
(A) Kearney						
(B) Yankton						
(C) Omaha						
(D) North Platte	B	☐	☐	☒	☐	☐

The person answering this example quickly eliminated (C) and (D). He was not sure of his choice between the other two possible answers. He knew that it was either Kearney or Yankton but did not know which of the two was correct. He picked (B) but marked the middle box. He received 7 points for this answer.

Example 3

	Answer					
Who was the commander of the Union Forces at the battle of Gettysburg?						
(A) Grant						
(B) Hooker						
(C) Meade						
(D) Burnside	D	☐	☐	☐	☒	☐

The person who answered this question knew that Grant was commanding the Union forces in the west at this time so he could be eliminated. He had heard the other three names but could not associate them with any battles. He guessed at (D) and indicated that he was not very sure of his answer. He lost 2 points on this question since the answer was (C).

Example 4

	Answer					
The capital of Illinois is						
(A) Chicago						
(B) Springfield						
(C) Rantoul						
(D) Decatur	D	☐	☐	☐	☐	☒

The person who answered this question did not know which one was the answer. Each alternative looked like it was possible. He guessed at (D) being the right answer but indicated that he was not sure. He got no points.

Numbers of Alternatives Other Than Four

The examples given up to this point have been for items with four-alternative answers. Although other numbers of alternatives might be used for some purposes, their use involves different credits and penalties for

the right and wrong answers. The table below gives the credits and losses for true-false, three-alternative, and five-alternative questions. The four-alternative credits and losses are included for completeness.

TABLE 1

	Certainty Levels				
	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
True-False*					
Credit if Right	100	95	75	35	0
Penalty if Wrong	300	225	135	20	0
Three Alternative					
Credit if Right	10	9	7	3	0
Penalty if Wrong	20	14	7	2	0
Four Alternative					
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0
Five Alternative					
Credit if Right	10	9	7	3	0
Penalty if Wrong	15	11	5	1	0

*Note that the True-False credits and penalties are given to three figures. This is so that the examinee can make a choice between "Very Sure" and "Sure" that would not automatically be in favor of "Sure", as it would be if only two rounded figures were used.

Distribute 100 Points Confidence Testing

In the Distribute 100 Points confidence items, the student indicates his confidence in each of the alternatives. He does this by dividing 100 points over the answers so that the answer he thinks is best receives the largest number of points while the other answers receive fewer points. To aid him in deciding how to give points, a scoring table is provided for him so he can see how much credit he will receive depending on which alternative is, in fact, correct.

The student is allowed to use only multiples of five, 33 1/3 (one-third of a hundred), and 66 2/3 (two-thirds of a hundred) points for reasons of ease in scoring and responding. The scoring depends only on the points given the correct answer with omitted items given a zero score. The scoring table follows with four examples using four alternatives.

Points assigned to correct alternative	Score
0	-23
5	-12
10	- 7
15	- 4
20	- 2
25	0
30	1
33 1/3	2
35	2
40	3
45	4
50	5
55	6
60	6
65	7
66 2/3	7
70	7
75	8
80	8
85	9
90	9
95	9
100	10

Example 1

Chicago is a

(A) state
(B) city
(C) country
(D) village

Confidence

(A) 0
(B) 100
(C) 0
(D) 0

The person who answered the example was 100% sure that the answer is (B). He could lose 23 points if he is wrong but that did not concern him because he knew he was right and would get 10 points credit.

Example 2

Confidence

Which town is not in Nebraska?

(A) Kearney
(B) Yankton
(C) Omaha
(D) North Platte

(A) 50
(B) 50
(C) 0
(D) 0

The person answering this question quickly eliminated (C) and (D). He was not sure of his choice between the other two possible answers. He knew that it was either Kearney or Yankton but did not know which of the two was correct, so he split the 100 points between them. He received 5 points.

Example 3

Confidence

Who was the commander of the Union forces at the battle of Gettysburg?

(A) Grant — (A) 0
(B) Hooker — (B) 30
(C) Meade — (C) 30
(D) Burnside — (D) 40

The person who answered this question knew that Grant was commanding the Union forces in the west at this time so he could be eliminated. He had heard the other three names but could not associate them with any battles, though he had an idea from something he had read, but could not remember, that it might be Burnside. He received 1 point (the answer is (C)).

Example 4

Confidence

The capital of Illinois is

(A) Chicago — (A) 25
(B) Springfield — (B) 25
(C) Rantoul — (C) 25
(D) Decatur — (D) 25

The person who answered this question did not know which one was correct. Each alternative looked like it was possible. He spread his points evenly and neither gained nor lost credit.

Numbers of Alternatives Other Than Four

As in the Pick-One confidence testing case, other numbers of alternatives might be used for some purposes. Their use involves different scores being assigned to the correct answer. The table below gives scores for true-false, three-alternative, and five-alternative questions. The four-alternative scores are included for completeness.

TABLE 2

Points assigned correct alternative	True-False	Three Alternative	Four Alternative	Five Alternative
0	-56	-32	-23	-19
5	-33	-17	-12	- 9
10	-23	-11	- 7	- 4
15	-17	- 7	- 4	- 2
20	-13	- 5	- 2	0
25	-10	- 3	0	1
30	- 7	- 1	1	3
33 1/3	- 6	0	2	3
35	- 5	0	2	3
40	- 3	2	3	4
45	- 2	3	4	5
50	0	4	5	6
55	1	5	6	6
60	3	5	6	7
65	4	6	7	7
66 2/3	4	6	7	7
70	5	7	7	8
75	6	7	8	8
80	7	8	8	9
85	8	9	9	9
90	8	9	9	9
95	9	9	9	9
100	10	10	10	10

Two Other Methods

*SCoRule Confidence Testing

The SCoRule is a mechanical device that helps the examinee allocate his confidence in such a way that the points allocated always add to 100. The device which is given to the examinee exhibits the scoring system being used. Since the device is constructed so that the points must add to 100, no check of the points assigned to the examinee is needed and he can record the score indicated on the SCoRule. The examiner needs only to circle the score given in the space for the correct answer and add these circled scores for a total score.

The score scale used by the SCoRule uses zero as minimum, where the scoring given in the Distribute 100 Points scoring on the previous pages sets the omit score equal to zero which is equivalent to the average score attained by completely random guessing. The negative scores have been reserved in this Handbook for wrong answers confidently expressed or expressions of disbelief in correct answers through the assignment of less than one fourth of the 100 points available (or one over the number of alternatives as in Table 1). The Distribute 100 Points, as presented in this Handbook, uses a scoring rule similar to that used for SCoRule but with the provision for equivalent credit (zero) for random guessing and omitted answers. As a result of this requirement, the scoring tables differ for different numbers of alternatives. Hence, no single physical device such as a SCoRule could be used for different numbers of alternatives. Readers interested in obtaining further information concerning SCoRule confidence testing should contact the Air Force Human Resources Laboratory, Technical Training Division, Lowry AFB, Colorado.

Five Stars or None Confidence Testing

Five Stars or None confidence testing is similar to Distribute 100 Points confidence testing and SCoRule testing in that weights or points are assigned to each alternative of an item. The student is given five points or stars to distribute over the alternatives in such a way that more points are given to the alternative he believes to be correct than any other alternative. The process is identical to distribute 100 points with the exception that five points are being distributed rather than 100. The scoring system is complex, based on how the points or stars are allocated to the various alternatives rather than the points assigned to the correct answer. Readers interested in obtaining further information concerning Five Stars or None confidence testing should contact the Air Force Human Resources Laboratory, Technical Training Division, Lowry AFB, Colorado.

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*SCoRule is a product of the Shuford-Massengill Corporation.

Relative Value of Each Method

Each of the four methods given above has definite advantages and disadvantages. For example, the task required of the student is easier for Pick-One confidence testing than the other methods as it is most similar to traditional multiple-choice testing and thus seems more natural to the students. Scoring is not too difficult, and the student is most likely to understand the consequences of his confidence marks. The major disadvantage is that scoring depends on the number of alternatives to the items which would result in scoring difficulties if items with varying numbers of alternatives are used. Also, confidence information is obtained only for the alternative believed most likely to be correct rather than each alternative.

The Distribute 100 Points method allows one to examine the student's degree of belief for each alternative which allows for greater precision and is beneficial in providing remedial instruction. On the other hand, the task is more difficult for the students and the time required for scoring is longer.

SCoRule testing makes the task of allocating 100 points less complicated and allows the examinee to easily determine his possible scores since he records the actual scores. Hand scoring is easier for the scorer as he does not have to look up any values on a scoring table. On the other hand, the ScoRules are devices that must be accounted for and do wear and get lost. When an item is omitted, there seems to be no procedure for scoring and the time required for the students to take the test is increased since the students need to manipulate the device.

Five Stars or None confidence testing requires the least effort on the part of the students of the methods where confidence is given for each alternative. The main disadvantage of this method is the complex scoring system which is difficult to understand and use.

It is recommended that the Pick-One or the Distribute 100 Points methods of confidence testing be implemented in any program of confidence testing. These methods are recommended because they appear to be less complex than either SCoRule or Five Star or None. Both Pick-One and Distribute 100 Points provide scoring for omitted items which is not provided by the other methods. Both Pick-One and Distribute 100 Points are adaptable to machine scorable answer sheets where SCoRule is not. Five Stars or None is prohibitive where hand scoring is being utilized but offers some promise where tests are scored by computer.

Selection and the Confidence Test Scale Scores

Oftentimes it is necessary to have a minimum score for performance. If an examinee scores above that minimum, he might be assigned to a particular group or advanced in a training course. On the other hand, if he falls below the minimum, he might be assigned to another group or recycled. The question then arises of what the minimum score should be if confidence testing is used? Usually, scores are considered in terms of the percentage of items correct. The following table gives the corresponding

confidence test scores for various percentage scores. In confidence testing, this score will depend on the number of items in the test so that each entry in the table must be multiplied by the number of items in the particular test. The formula for the equivalent confidence score is

confidence score = table value x number of items in the test.

Percent score	Pick-One	Distribute 100
95	9.3	9.6
90	8.7	9.2
85	8.0	8.8
80	7.3	8.4
75	6.7	7.9
70	6.0	7.4
65	5.3	6.9
60	4.7	6.3
55	4.0	5.7
50	3.3	5.0

For example, suppose that an examinee takes a final examination for a block of instruction in technical training where a passing score is considered to be 70 percent. If this block examination is given as a confidence test, the score equivalent to 70 percent for a 100-item test is 600 if Pick-One confidence testing is used and 740 if Distribute 100 Points is used.

Using Confidence Scores

As Diagnostic Aids

Confidence testing may be a useful device for determining student weaknesses in areas where some type of remediation may take place if a specified level of performance is not obtained. Consider, for example, four students' responses to a test item which has been administered as a confidence item and the problem of what type of remediation is required for each student. The types of student responses are as follows: one student answers the item correctly and indicates a high degree of confidence, the second student answers incorrectly with a low degree of confidence, another student also answers incorrectly but with a high degree of confidence, and the fourth student answers correctly with a low degree of confidence.

The student who answered correctly with a high degree of confidence knows the answer to the question and is confident, thus there is no need to instruct him any further about the specific piece of information being tested. On the other hand, the other three students seem to merit consideration for varying degrees of remediation since they answered incorrectly or with little certainty.

The student who answered incorrectly with high confidence is sure his wrong answer is right, may simply have assimilated an incorrect fact, and may have misunderstood a technical process. To the extent that his error is factual, he can be shown first why the answer he marked was incorrect and then, only after he is convinced of its incorrectness, why the keyed answer is in fact correct. This process is a two-stage process where the requirement is made that the first stage be completed before the second stage can begin.

The case of the student who places little confidence in his wrong answer may be different. He is not sure of the answer he marked and can probably be easily convinced that it is wrong thus the time required to carry out stage one is very short. Usually, in this case, one can begin by just showing him why the correct answer is in fact correct saving time in the remediation process. A similar case may be made for the student who answered correctly but with little confidence. In this manner the additional information provided by the indication of the student's confidence may be used as a guide for providing remediation that is not given using traditional multiple-choice test items. However, if this student is not sure simply because he does not understand at all, his remediation should prove more difficult. Clearly, the nature of his problem should be ascertained before his remedial training is completed.

As can be seen from above, when diagnostic tests are administered as confidence tests, the instructor may tailor the remediation practice to the individual needs of the attending students in an efficient manner. In this way, confidence testing provides a method for individualized remediation. It should be noted though that confidence testing procedures do not guarantee success in remediation but only provide a guide for conducting remediation. For example, a student may respond to items with low certainty as a result of indifferences to the military, the instructor, or some other entity rather than a lack of knowledge. Problems of this type are not in the spirit of this Handbook and thus not discussed.

Other Uses

Confidence testing may be used in a number of other ways, such as

1. Confidence testing may be adaptable to a situation where students are administered a test of relatively difficult items. It might serve as a device for reducing student anxiety in these situations and provides a method for rewarding partial knowledge which would not result on a group of difficult multiple-choice items.

2. Confidence testing might be used to evaluate the quality of various items. Items that receive a large number of wrong responses that are marked with complete confidence indicate some type of vagueness in the items or misunderstanding in teaching.

3. Confidence testing might be used to reduce the length of tests while at the same time retaining the same level of reliability. Many studies of confidence testing have shown that when a multiple-choice test was administered as a confidence test, the reliability of the test increased. If an existing multiple-choice test has a sufficient standard of reliability and the content of the test is such that the test length can be reduced without a corresponding loss of validity, the test might be reduced in length yet retain the previous reliability standard by introducing a confidence format.

Advantages and Disadvantages of Using Confidence Testing in Technical Training

The advantages of using confidence testing can be summarized as follows:

1. Confidence testing may provide the test user with more information about a student's level of knowledge than does multiple-choice testing.

2. Confidence testing may provide a more reliable test than multiple-choice testing for the same number of items.

3. Confidence testing may allow the instructor to tailor remedial presentations to individual student weaknesses.

4. Confidence testing requires students to think over their answers more carefully before responding thus increasing their sensitivity to the content of the questions.

The disadvantages of using confidence testing procedures as used in this project can be summarized as follows:

1. More time is required to administer (about two minutes for each fifteen minute regular time period) and score (about twice as much as regularly required) confidence tests than multiple-choice tests.

2. If the test is not sufficiently difficult, most students use only the extreme confidence responses.

3. If students have had no experience with confidence testing, personality factors may contaminate the resulting scores.

4. The technique is still in its experimental stage and its implementation requires a change in standard procedure. Hence, it may meet resistance from instructors.

5. The students must know and understand the scoring system used. This requires special training time as the use of the technique is not widespread.

SECTION II

Instructions for the Use of Confidence Testing

Supervisors Instructions for Pick-One
Confidence Testing-Hand Scoring

DISTRIBUTE THE ANSWER SHEETS FIRST. CHECK AND SEE IF EVERY EXAMINEE HAS ANSWER SHEETS AND PENCIL.

DISTRIBUTE THE DIRECTIONS TO THE EXAMINEES. CHECK AND SEE IF EVERY EXAMINEE HAS DIRECTIONS.

DISTRIBUTE THE TEST QUESTIONS.

READ ALOUD THE FOLLOWING DIRECTIONS. ANSWER ANY QUESTIONS AFTER YOU READ THE DIRECTIONS.

Directions for Multiple-Choice: Pick-One

You are advised to use your time effectively and to work as rapidly as you can without losing accuracy. Do not waste your time on questions that are too difficult for you. Go on to the other questions and come back to the difficult ones later if you can.

BE SURE YOU UNDERSTAND THE DIRECTIONS BEFORE ATTEMPTING TO ANSWER ANY QUESTIONS.

YOU ARE TO INDICATE ALL YOUR ANSWERS ON THE SEPARATE ANSWER SHEET. No credit will be given for anything written on any other paper. Read the question carefully and read each alternative. After you have decided which of the suggested answers is most nearly correct, mark that answer on the line under heading "ANSWER". BE SURE THAT YOU MARK THE ANSWER CLEARLY. Give only the one answer to each question. If you change your answer, be sure that all previous marks are erased completely.

Now, you are asked to indicate how sure you are that the answer you just marked was correct. This is to be indicated in the boxes to the right of your first mark. If you are absolutely sure your answer is correct and all other alternatives are wrong, mark the box labeled very sure. If you cannot eliminate any alternatives and all the alternatives seem equally likely to you, mark the box labeled not sure. If you can eliminate any alternatives as possibilities but cannot eliminate enough to mark the box labeled very sure, mark one of the three intermediate boxes you feel appropriate. A scoring table that tells you how the test will be scored follows with some examples.

THE TEST IS BEING SCORED SO THAT YOU CAN DO YOUR BEST ONLY IF YOU INDICATE YOUR SURENESS ACCURATELY. DO NOT INDICATE YOU ARE SURER THAN YOU REALLY ARE OR LESS SURE THAN YOU REALLY ARE.

	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0

Example 1

Chicago is a

(A) state
(B) city
(C) country
(D) village

Answer	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
B	☒	☐	☐	☐	☐

In the above example the subject was very sure, certain in fact, that the answer he marked was correct. He was right and so received 10 points.

Example 2

Which town is not in Nebraska?

(A) Kearney
(B) Yankton
(C) Omaha
(D) North Platte

Answer	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
B	☐	☐	☒	☐	☐

The person answering this example quickly eliminated (C) and (D). He was not sure of his choice between the other two possible answers. He knew that it was either Kearney or Yankton but did not know which of the two was correct. He picked (B) but marked the middle box. Being correct, he was awarded 7 points.

Example 3

Who was the commander of the Union Forces at the battle of Gettysburg?

(A) Grant
(B) Hooker
(C) Meade
(D) Burnside

Answer	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
D	☐	☐	☐	☒	☐

The person who answered this question knew that Grant was commanding the Union Forces in the west at this time so he could be eliminated. He had heard the other three names but couldn't associate them with any battles. He guessed at (D) and indicated that he was not very sure of his answer. Unfortunately he was wrong, but he only lost 2 points.

	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0

Example 4

The capital of Illinois is

(A) Chicago
(B) Springfield
(C) Rantoul
(D) Decatur

Answer D

Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
☐	☐	☐	☐	☒

The person who answered this question did not know which answer was correct. Each alternative looked as though it was possible. He guessed (D) as being the right answer but indicated that he was not sure. He received neither credit nor penalty.

If these four examples were taken as a test, the person taking them who marked as indicated above would get 15 points, 10 for the first example, 7 for the second, would lose two for the third, and would get zero for the fourth. Answering helps even when you are not quite sure, but it does not pay to overstate your certainty. On Example 4, if the person said he was very sure he would have lost seventeen points and received a negative score. Only one time out of four would he have been lucky enough to get it right. But if you are sure, say so because it pays.

Scoring the Pick-One Confidence Testing

Pick-One confidence testing scoring is different from multiple-choice scoring as can be seen from the examples. Scores are set up so a student can indicate uncertainty, but risks more as he expresses more certainty. Credits and penalties are set up so that he can expect to score best by giving his certainty as accurately as possible.

The score an examinee receives with Pick-One confidence items is equal to the sum of the credits for right answers less the sum of the losses for wrong answers. If a student omits an item, he receives zero credit. Scoring is most accurately accomplished if one follows some systematic procedure, such as the following:

1. Circle all the incorrect answers and mark a zero in the margin by the omitted items.

2. Using the scoring table line indicating the penalty for guessing answers, mark in the margin for each circled answer a penalty in points depending on the amount of uncertainty indicated.

3. Using the scoring table line indicating the credit for correct answers mark in the margin for each uncircled answer the credit in points depending on the amount of uncertainty indicated.

4. Add the credits and losses separately.

5. Subtract the total losses from the total credits.

An example of scoring an answer sheet illustrating each of the four previous examples plus an omitted fifth item follows.

Example of Pick-One Confidence Test Scoring

Name _____ Date _____

Course _____ Section _____

Total of Credits 17 Less Total of Losses 2 Yields a Score of 15

	Answer	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure	Credits	Penalty
1.	B	☒	☐	☐	☐	☐	10	
2.	B	☐	☐	☒	☐	☐	7	
3.	D	☐	☐	☐	☒	☐		2
4.	D	☐	☐	☐	☐	☒	0	
5.		☐	☐	☐	☐	☐		

	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0

Directions for Students Using Pick-One Confidence Testing-Hand Scoring

Directions for Multiple-Choice: Pick-One

You are advised to use your time effectively and to work as rapidly as you can without losing accuracy. Do not waste your time on questions that are too difficult for you. Go on to the other questions and come back to the difficult ones later if you can.

BE SURE YOU UNDERSTAND THE DIRECTIONS BEFORE ATTEMPTING TO ANSWER ANY QUESTIONS.

YOU ARE TO INDICATE ALL YOUR ANSWERS ON THE SEPARATE ANSWER SHEET. No credit will be given for anything written on any other paper. Read the question carefully and read each alternative. After you have decided which of the suggested answers is most nearly correct, mark that answer on the line under heading "ANSWER." BE SURE THAT YOU MARK THE ANSWER CLEARLY. Give only the one answer to each question. If you change your answer, be sure that all previous marks are erased completely.

Now, you are asked to indicate how sure you are that the answer you just marked was correct. This is to be indicated in the boxes to the right of your first mark. If you are absolutely sure your answer is correct and all the other alternatives are wrong, mark the box labeled very sure. If you cannot eliminate any alternatives and all the alternatives seem equally likely to you, mark the box labeled not sure. If you can eliminate any alternatives as possibilities but cannot eliminate enough to mark the box labeled very sure, mark one of the three intermediate boxes you feel appropriate. A scoring table that tells you how the test will be scored follows with some examples.

THE TEST IS BEING SCORED SO THAT YOU CAN DO YOUR BEST ONLY IF YOU INDICATE YOUR SURENESS ACCURATELY. DO NOT INDICATE YOU ARE SURER THAN YOU REALLY ARE OR LESS SURE THAN YOU REALLY ARE.

	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0

Example 1

Chicago is a

(A) state
(B) city
(C) country
(D) village

Answer	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
B	☒	☐	☐	☐	☐

In the above example the subject was very sure, certain in fact, that the answer he marked was correct. He was right and so received 10 points.

Example 2

Which town is not in Nebraska?

(A) Kearney
(B) Yankton
(C) Omaha
(D) North Platte

B	☐	☐	☒	☐	☐

The person answering this example quickly eliminated (C) and (D). He was not sure of his choice between the other two possible answers. He knew that it was either Kearney or Yankton but did not know which of the two was correct. He picked (B) but marked the middle box. Being correct, he was awarded 7 points.

Example 3

Who was the commander of the Union Forces at the battle of Gettysburg?

(A) Grant
(B) Hooker
(C) Meade
(D) Burnside

D	☐	☐	☐	☒	☐

The person who answered this question knew that Grant was commanding the Union Forces in the west at this time so he could be eliminated. He had heard the other three names but could not associate them with any battles. He guessed at (D) and indicated that he was not very sure of his answer. Unfortunately he was wrong, but he only lost 2 points.

	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0

Example 4

	Answer	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
The capital of Illinois is						
(A) Chicago						
(B) Springfield						
(C) Rantoul						
(D) Decatur	D	☐	☐	☐	☐	☒

The person who answered this question did not know which one was the answer. Each alternative looked like it was possible. He guessed at (D) being the right answer but indicated that he was not sure. He received neither any credit or penalty.

If these four examples were taken as a test the person taking them who marked as indicated above would get 15 points, 10 for the first example, 7 for the second, would lose two for the third, and would get zero for the fourth. Answering helps even when you are not quite sure, but it does not pay to overstate your certainty. On Example 4, if the person said he was very sure he would have lost seventeen points and received a negative score. Only one time out of four would he have been lucky enough to get it right. But if you are sure, say so because it pays.

Supervisors Instructions for Pick-One Confidence Testing-Machine Scoring

Machine scorable answer sheets can be used to respond to Pick-One items and might be desirable should a high volume application arise. Though scoring cannot be accomplished using traditional mark-sensing equipment, the machine scorable answer sheet could be a useful device for recording responses in digital form in case more sophisticated processing equipment is available for this purpose. These instructions are for the IBM 805 answer sheet with four-alternative test items. To use the machine scorable answer sheet the directions are as follows:

DISTRIBUTE THE ANSWER SHEETS FIRST. CHECK AND SEE IF EVERY EXAMINEE HAS ANSWER SHEETS AND PENCIL.

DISTRIBUTE THE DIRECTIONS TO THE EXAMINEES. CHECK AND SEE IF EVERY EXAMINEE HAS DIRECTIONS.

DISTRIBUTE THE TEST QUESTIONS.

READ ALOUD THE FOLLOWING DIRECTIONS. ANSWER ANY QUESTIONS AFTER YOU READ THE DIRECTIONS.

Directions for Multiple-Choice: Pick-One

You are advised to use your time effectively and to work as rapidly as you can without losing accuracy. Do not waste your time on questions that are too difficult for you. Go on to the other questions and come back to the difficult ones later if you can.

BE SURE YOU UNDERSTAND THE DIRECTIONS BEFORE ATTEMPTING TO ANSWER ANY QUESTIONS.

YOU ARE TO INDICATE ALL YOUR ANSWERS ON THE SEPARATE ANSWER SHEET. No credit will be given for anything written on any other paper. After you have decided which of the suggested answers is most nearly correct, blacken the corresponding space on the answer sheet. BE SURE THAT EACH MARK IS BLACK AND COMPLETELY FILLS THE ANSWER SPACE. Give only one answer to each question. If you change an answer, be sure all previous marks are erased completely. Incomplete erasures may be read as intended answers.

Now you are asked to indicate how sure you are that the answer you just marked was correct. In one of the five boxes to the right of the answer space you are to indicate how sure you are that your answer is correct. For instance, the five spaces immediately to the right of item 31 are to be used to indicate your confidence in your response to item 1, use the spaces for item 32 to indicate your confidence in your response to item 2, and so forth. Your second set of answers, if any, should start in the spaces for item 61 and the corresponding set of indications of confidence should be in the column starting with number 91.

	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
	A	B	C	D	E
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0

The table above shows how to indicate how certain you are, the number of points you receive if you are right, and the number you lose if you are wrong. If you are very sure about your answer to item 1, mark alternative A for item number 31 on the answer sheet. If you are right you will get 10 points and if you are wrong you will lose 17 points. Another example would be that if you are not very sure of your answer to question number 3 you would mark D for item number 33 on the answer sheet and if you are right you will get 4 points--if you are wrong you will only lose 2 points. The surer you indicate, the more points you get if you are right and the more you lose if you are wrong.

THE CREDITS ARE PLANNED SO THAT YOU WILL DO BEST IF YOU INDICATE YOUR DEGREE OF CERTAINTY ACCURATELY. DO NOT INDICATE THAT YOU ARE SURER THAN YOU ARE OR LESS SURE THAN YOU ARE.

Example 1

Chicago is a

(A) state
(B) city
(C) country
(D) village

Answer Sheet

	A	B	C	D	E		A	B	C	D	E
1.		■				31.	■				

In the above example the subject was very sure, certain in fact, that the answer he marked was correct. He was right and so received 10 points.

Example 2

Which town is not in Nebraska?

(A) Kearney
(B) Yankton
(C) Omaha
(D) North Platte

Answer Sheet

	A	B	C	D	E		A	B	C	D	E
2.		■				32.			■		

The person answering this example quickly eliminated (C) and (D). He was not sure of his choice between Kearney and Yankton but picked Yankton as being more likely and marked the middle box. Being correct, he was awarded 7 points.

	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
	A	B	C	D	E
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0

Example 3

Who was the commander of the Union Forces at the battle of Gettysburg?

(A) Grant
(B) Hooker
(C) Meade
(D) Burnside

Answer Sheet

	A	B	C	D	E		A	B	C	D	E
3.				▮		33.				▮	

The person who answered this question knew Grant was commanding the Union Forces in the west at this time so he could be eliminated. He had heard the other three names but could not associate them with any battles. He guessed at (D) and indicated that he was not very sure of his answer. Unfortunately, he was wrong, but he only lost 2 points.

Example 4

The capital of Illinois is

(A) Chicago
(B) Springfield
(C) Rantoul
(D) Decatur

Answer Sheet

	A	B	C	D	E		A	B	C	D	E
4.						34.					▮

The person who answered this question did not know which one was the answer. Each alternative looked like it was possible. He guessed at (D) being the right answer but indicated that he was not sure. He received neither any credit or penalty.

THE SCORE IS PLANNED SO THAT YOU WILL DO BEST IF YOU INDICATE YOUR BELIEFS ACCURATELY. DO NOT GIVE AN ALTERNATIVE MORE POINTS THAN YOU THINK YOU SHOULD OR LESS THAN YOU THINK YOU SHOULD.

This completes the directions as they deal with scoring Pick-One items. The user might wish to design another format for the answer sheet which includes, for example, a better coordination of the item numbers where the confidence responses are made with the item number where the answer is indicated. Such might be desirable for very high volume application. The directions here are for use with the answer sheet traditionally used with the IBM 805 scoring machine though as indicated above that equipment cannot accomplish the scoring.

Directions for Students Using Pick-One Confidence Testing-Machine Scoring

You are advised to use your time effectively and to work as rapidly as you can without losing accuracy. Do not waste your time on questions that are too difficult for you. Go on to the other questions and come back to the difficult ones later if you can.

BE SURE YOU UNDERSTAND THE DIRECTIONS BEFORE ATTEMPTING TO ANSWER ANY QUESTIONS.

YOU ARE TO INDICATE ALL YOUR ANSWERS ON THE SEPARATE ANSWER SHEET. No credit will be given for anything written on any other paper. After you have decided which of the suggested answers is most nearly correct, blacken the corresponding space on the answer sheet. BE SURE THAT EACH MARK IS BLACK AND COMPLETELY FILLS THE ANSWER SPACE. Give only one answer to each question. If you change an answer, be sure all previous marks are erased completely. Incomplete erasures may be read as intended answers.

Now you are asked to indicate how sure you are that the answer you just marked was correct. In one of the five boxes to the right of the answer space you are to indicate how sure you are that your answer is correct. For instance, the five spaces immediately to the right of item 31 are to be used to indicate your confidence in your response to item 1, use the spaces for item 32 to indicate your confidence in your response to item 2, and so forth. Your second set of answers, if any, should start in the spaces for item 61 and the corresponding set of indications of confidence should be in the column starting with number 91.

	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
	A	B	C	D	E
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0

The table above shows how to indicate how certain you are, the number of points you receive if you are right, and the number you lose if you are wrong. If you are very sure about your answer to item 1, mark alternative A for item number 31 on the answer sheet. If you are right you will get 10 points and if you are wrong you will lose 17 points. Another example would be that if you are not very sure of your answer to question number 3 you would mark D for item number 33 on the answer sheet and if you are right you will get 4 points--if you are wrong you will only lose 2 points. The surer you indicate, the more points you get if you are right and the more you lose if you are wrong.

THE CREDITS ARE PLANNED SO THAT YOU WILL DO BEST IF YOU INDICATE YOUR DEGREE OF CERTAINTY ACCURATELY. DO NOT INDICATE THAT YOU ARE SURER THAN YOU ARE OR LESS SURE THAN YOU ARE.

	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
	A	B	C	D	E
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0

Example 1

Chicago is a

(A) state
(B) city
(C) country
(D) village

Answer Sheet

	A	B	C	D	E		A	B	C	D	E
1.		■				31.	■				

In the above example the subject was very sure, certain in fact, that the answer he marked was correct. He was right and so received 10 points.

Example 2

Which town is not in Nebraska?

(A) Kearney
(B) Yankton
(C) Omaha
(D) North Platte

Answer Sheet

	A	B	C	D	E		A	B	C	D	E
2.		■				32.			■		

The person answering this example quickly eliminated (C) and (D). He was not sure of his choice between Kearney and Yankton but picked Yankton as being more likely and marked the middle box. Being correct, he was awarded 7 points.

Example 3

Who was the commander of the Union Forces at the battle of Gettysburg?

(A) Grant
(B) Hooker
(C) Meade
(D) Burnside

Answer Sheet

	A	B	C	D	E		A	B	C	D	E
3.				■		33.				■	

The person who answered this question knew Grant was commanding the Union Forces in the west at this time so he could be eliminated. He had heard the other three names but could not associate them with any battles. He guessed at (D) and indicated that he was not very sure of his answer. Unfortunately, he was wrong, but he only lost 2 points.

	Very Sure	Sure	Fairly Sure	Not Very Sure	Not Sure
	A	B	C	D	E
Credit if Right	10	9	7	3	0
Penalty if Wrong	17	12	5	2	0

Example 4

The capital of Illinois is

(A) Chicago
(B) Springfield
(C) Rantoul
(D) Decatur

Answer Sheet

	A	B	C	D	E		A	B	C	D	E
4.	|	|	|	|	|	34.	|	|	|	|	▮

The person who answered this question did not know which one was the answer. Each alternative looked like it was possible. He guessed at (D) being the right answer but indicated that he was not sure. He received neither any credit or penalty.

Supervisors Instructions for Distribute 100 Points
Confidence Testing-Hand Scoring

DISTRIBUTE THE ANSWER SHEETS FIRST. CHECK AND SEE IF EVERY EXAMINEE HAS ANSWER SHEETS AND PENCIL.

DISTRIBUTE THE DIRECTIONS TO THE EXAMINEES. CHECK AND SEE IF EVERY EXAMINEE HAS DIRECTIONS.

DISTRIBUTE THE TEST QUESTIONS.

READ ALOUD THE FOLLOWING DIRECTIONS. ANSWER ANY QUESTIONS AFTER YOU READ THE DIRECTIONS.

Directions for Distribute 100 Points

You are advised to use your time effectively and to work as rapidly as you can without losing accuracy. Do not waste your time on questions that are too difficult for you. Go on to the other questions and come back to the difficult ones later if you can.

BE SURE YOU UNDERSTAND THE DIRECTIONS BEFORE ATTEMPTING TO ANSWER ANY QUESTIONS.

YOU ARE TO INDICATE ALL YOUR ANSWERS ON THE SEPARATE ANSWER SHEET. No credit will be given for anything written on any other paper. Read each question and each alternative carefully. You should form some belief as to the truth of each alternative listed. You are required to record your belief about each alternative by distributing 100 points over the possible alternatives in such a way that the alternative you believe most likely correct receives the most number of points. For example, if you are completely sure of your answer, place all 100 points on the line corresponding to that alternative and 0 on the remainder. If you cannot eliminate any of the alternatives as being incorrect, place 25 points on each alternative. You can simplify your task by deciding which alternatives you know to be wrong and give them zero's before you distribute points for alternatives you believe might be correct. When you finish, the largest number of points should be on the alternative you believe most likely to be correct.

Your scores will be based on the number of points you assign to the correct answer. A scoring table is given below to help you understand the scoring.

THE CREDITS ARE PLANNED SO THAT YOU WILL DO BEST IF YOU INDICATE YOUR DEGREE OF CERTAINTY ACCURATELY. DO NOT INDICATE THAT YOU ARE SURER THAN YOU ARE OR LESS SURE THAN YOU ARE.

Points assigned to correct alternative	Score	Points assigned to correct alternative	Score	Points assigned to correct alternative	Score
0	-23	35	2	70	7
5	-12	40	3	75	8
10	- 7	45	4	80	8
15	- 4	50	5	85	9
20	- 2	55	6	90	9
25	0	60	6	95	9
30	1	65	7	100	10
33 1/3	2	66 2/3	7		

Be sure your points add to 100. For ease in marking you should use multiples of five or 33 1/3 (one-third of a hundred) and 66 2/3 (two-thirds of a hundred) for marking. Read the following examples carefully before beginning.

Example 1

Chicago is a

(A) state
(B) city
(C) country
(D) village

Confidence

(A) 0
(B) 100
(C) 0
(D) 0

The person who answered the example was 100% sure that the answer is (B). He could lose 23 points if he is wrong but that did not concern him because he knew he was right and would get 10 points credit. He is right and gets 10 points.

Example 2

Which town is not in Nebraska?

(A) Kearney
(B) Yankton
(C) Omaha
(D) North Platte

Confidence

(A) 50
(B) 50
(C) 0
(D) 0

The person answering this question quickly eliminated (C) and (D). He was not sure of his choice between the other two possible answers. He knew that it was either Kearney or Yankton but did not know which of the two is correct, so he split the 100 points between them. Since Yankton is correct, the score is 5.

Points assigned to correct alternative	Score	Points assigned to correct alternative	Score	Points assigned to correct alternative	Score
0	-23	35	2	70	7
5	-12	40	3	75	8
10	- 7	45	4	80	8
15	- 4	50	5	85	9
20	- 2	55	6	90	9
25	0	60	6	95	9
30	1	65	7	100	10
33 1/3	2	66 2/3	7		

Be sure your points add to 100. For ease in marking you should use multiples of five or 33 1/3 (one-third of a hundred) and 62 2/3 (two-thirds of a hundred) for marking. Read the following examples carefully before beginning.

Example 3

Who was the commander of the Union forces at the battle of Gettysburg?

	Confidence
(A) Grant	(A) 0
(B) Hooker	(B) 30
(C) Meade	(C) 30
(D) Burnside	(D) 40

The person who answered this question knew that Grant was commanding the Union Forces in the west at this time so he could be eliminated. He had heard the other three names but could not associate them with any battles, though he had an idea from something he had read, but could not remember, that it might be Burnside. Actually, (C) is the right answer and since he gave (C) thirty points, his score for the item is 1.

Example 4

The capital of Illinois is

	Confidence
(A) Chicago	(A) 25
(B) Springfield	(B) 25
(C) Rantoul	(C) 25
(D) Decatur	(D) 25

The person who answered this question did not know which one is the answer. Each alternative looked like it was possible. He spread his points evenly and neither gained nor lost credit, since the score for a confidence of 25 is zero. He would also have received zero had he omitted the item.

You have noted that you risk more on an alternative the more confidence you place on it--putting a lot of points on an alternative gains you a lot if you are right and loses a lot if you are wrong. The scoring system is set up so the risk is worth it, though. If you are sure, say so because it pays.

Scoring the Distribute 100 Points Confidence Test

This procedure is different than the one used in Pick-One confidence tests. There is no need to indicate which items are right and wrong--the score is based on the response to the correct answer only. The procedure is:

1. Begin by circling the number of points that the student gave the correct answer.

2. For each item, find the number of points in the column headed "number of points on the correct answer." Record the corresponding entry in the score column in the margin to the right of the item.

3. Add these numbers together to obtain the total score.

As an example consider the four examples previously given. It has been pointed out that the number of points are 10, 5, 1, and 0 for example items 1, 2, 3, and 4 respectively. The sum of these numbers is 16 and that is the score for a person who answered these four items in the way indicated. To show the effect of the penalty scores, suppose the confidence to example 1 had been given as 100 points for alternative (A) and zero for the rest. Since (B) is the answer to the item, the score for the zero points given to (B) would be -23. This would make the item scores -23, 5, 1, and zero for a total of -17 points.

Directions for Students Using Distribute 100 Points Confidence Testing-Hand Scoring

You are advised to use your time effectively and to work as rapidly as you can without losing accuracy. Do not waste your time on questions that are too difficult for you. Go on to the other questions and come back to the difficult ones later if you can.

BE SURE YOU UNDERSTAND THE DIRECTIONS BEFORE ATTEMPTING TO ANSWER ANY QUESTIONS.

YOU ARE TO INDICATE ALL YOUR ANSWERS ON THE SEPARATE ANSWER SHEET. No credit will be given for anything written on any other paper. Read each question and each alternative carefully. You should form some belief as to the truth of each alternative listed. You are required to record your belief about each alternative by distributing 100 points over the possible alternatives in such a way that the alternative you believe most likely correct receives the most number of points. For example, if you are completely sure of your answer, place all 100 points on the line corresponding to that alternative and 0 on the remainder. If you cannot eliminate any of the alternatives as being incorrect, place 25 points on each alternative. You can simplify your task by deciding which alternatives you know to be wrong and give them zero's before you distribute points for alternatives you believe might be correct. When you finish, the largest number of points should be on the alternative you believe most likely to be correct.

Your score will be based on the number of points you assign to the correct answer. A scoring table is given below to help you understand the scoring.

Points assigned to correct alternative	Score	Points assigned to correct alternative	Score	Points assigned to correct alternative	Score
0	-23	35	2	70	7
5	-12	40	3	75	8
10	- 7	45	4	80	8
15	- 4	50	5	85	9
20	- 2	55	6	90	9
25	0	60	6	95	9
30	1	65	7	100	10
33 1/3	2	66 2/3	7		

Be sure your points add to 100. For ease in marking you should use multiples of five or 33 1/3 (one-third of a hundred) and 66 2/3 (two-thirds of a hundred) for marking. Read the following examples carefully before beginning.

THE CREDITS ARE PLANNED SO THAT YOU WILL DO BEST IF YOU INDICATE YOUR DEGREE OF CERTAINTY ACCURATELY. DO NOT INDICATE THAT YOU ARE SURER THAN YOU ARE OR LESS SURE THAN YOU ARE.

Points assigned to correct alternative	Score	Points assigned to correct alternative	Score	Points assigned to correct alternative	Score
0	-23	35	2	70	7
5	-12	40	3	75	8
10	- 7	45	4	80	8
15	- 4	50	5	85	9
20	- 2	55	6	90	9
25	0	60	6	95	9
30	1	65	7	100	10
33 1/3	2	66 2/3	7		

Be sure your points add to 100. For ease in marking you should use multiples of five or 33 1/3 (one-third of a hundred) and 66 2/3 (two-thirds of a hundred) for marking. Read the following examples carefully before beginning.

Example 1

Chicago is a

(A) state
(B) city
(C) country
(D) village

Confidence

(A) 0
(B) 100
(C) 0
(D) 0

The person who answered the example was 100% sure that the answer is (B). He could lose 23 points if he is wrong but that did not concern him because he knew he was right and would get 10 points credit. He is right and gets 10 Points.

Example 2

Which town is not in Nebraska?

(A) Kearney
(B) Yankton
(C) Omaha
(D) North Platte

Confidence

(A) 50
(B) 50
(C) 0
(D) 0

The person answering this question quickly eliminated (C) and (D). He was not sure of his choice between the other two possible answers. He knew that it was either Kearney or Yankton but did not know which of the two is correct, so he split the 100 points between them. Since Yankton is correct, the score is 5.

Points assigned to correct alternative	Score	Points assigned to correct alternative	Score	Points assigned to correct alternative	Score
0	-23	35	2	70	7
5	-12	40	3	75	8
10	- 7	45	4	80	8
15	- 4	50	5	85	9
20	- 2	55	6	90	9
25	0	60	6	95	9
30	1	65	7	100	10
33 1/3	2	66 2/3	7		

Be sure your points add to 100. For ease in marking you should use multiples of five or 33 1/3 (one-third of a hundred) and 66 2/3 (two-thirds of a hundred) for marking. Read the following examples carefully before beginning.

Example 3

Who was the commander of the Union forces at the battle of Gettysburg?

	Confidence
(A) Grant	(A) 0
(B) Hooker	(B) 30
(C) Meade	(C) 30
(D) Burnside	(D) 40

The person who answered this question knew that Grant was commanding the Union forces in the west at this time so he could be eliminated. He had heard the other three names but could not associate them with any battles, though he had an idea from something he had read, but could not remember, that it might be Burnside. Actually, (C) is the right answer and since he gave (C) thirty points, his score for the item is 1.

Example 4

The capital of Illinois is

	Confidence
(A) Chicago	(A) 25
(B) Springfield	(B) 25
(C) Rantoul	(C) 25
(D) Decatur	(D) 25

The person who answered this question did not know which one is the answer. Each alternative looked like it was possible. He spread his points evenly and neither gained nor lost credit, since the score for a confidence of 25 is zero. He would also have received zero had he omitted the item.

You have noted that you risk more on an alternative the more confidence you place on it--putting a lot of points on an alternative gains you a lot if you are right and loses a lot if you are wrong. The scoring system is set up so the risk is worth it, though. If you are sure, say so because it pays.

Supervisors Instructions for Distribute 100 Points Confidence Testing-Machine Scoring

When high volume applications of Distribute 100 Points confidence testing is desired, the process can be modified for machine scoring. The following instructions utilize the IBM 805 answer sheet.

DISTRIBUTE THE ANSWER SHEETS FIRST. CHECK AND SEE IF EVERY EXAMINEE HAS ANSWER SHEETS AND PENCIL.

DISTRIBUTE THE DIRECTIONS TO THE EXAMINEES. CHECK AND SEE IF EVERY EXAMINEE HAS DIRECTIONS.

DISTRIBUTE THE TEST QUESTIONS.

READ ALOUD THE FOLLOWING DIRECTIONS. ANSWER ANY QUESTIONS AFTER YOU READ THE DIRECTIONS.

Directions for Distribute 100 Points

You are advised to use your time effectively and to work as rapidly as you can without losing accuracy. Do not waste your time on questions that are too difficult for you. Go on to the other questions and come back to the difficult ones later if you can.

BE SURE YOU UNDERSTAND THE DIRECTIONS BEFORE ATTEMPTING TO ANSWER ANY QUESTIONS.

YOU ARE TO INDICATE ALL YOUR ANSWERS ON THE SEPARATE ANSWER SHEET. No credit will be given for anything written on any other paper. Read each question and each alternative carefully. You should form some belief as to the truth of each alternative listed. You are required to record your belief about each alternative by distributing 5 points over the possible alternatives in such a way that the alternative you believe most likely correct receives the most number of points. For example, if you are completely sure of your answer, place all 5 points on that alternative by marking between the lines designated E on the answer sheet. When you finish, the largest number of points should be on the alternative you believe most likely to be correct. If you cannot eliminate any alternatives, omit the item.

Your score will be based on the number of points you assign to the correct answer. A scoring table is given below to help you understand the scoring.

Points assigned to correct alternative	Score	Points assigned to correct alternative	Score
0	-23	4	8
1	- 2	5	10
2	3	omit	0
3	6		

Be sure you blacken each mark completely. If you decide to change a mark, erase completely. Poorly erased marks may be read as answers.

Points assigned to correct alternative	Score
0	-23
1	- 2
2	3
3	6
4	8
5	10
omit	0

Be sure you blacken each mark completely. If you decide to change a mark, erase completely. Poorly erased marks may be read as answers.

BE SURE YOU USE ONLY FIVE POINTS. IF YOU USE MORE YOU WILL BE PENALIZED.

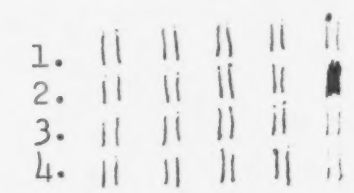
READ THE FOLLOWING EXAMPLES CAREFULLY BEFORE BEGINNING.

Example 1

Chicago is a

(A) state
(B) city
(C) country
(D) village

Answer Sheet



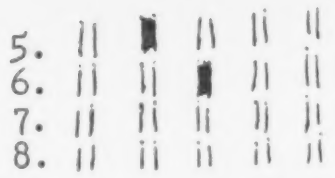
In the above example the subject was very sure, certain in fact, that the answer he marked (B) was correct. He was right and so received 10 points.

Example 2

Which town is not in Nebraska?

(A) Kearney
(B) Yankton
(C) Omaha
(D) North Platte

Answer Sheet



The person answering this example quickly eliminated (C) and (D). He was not sure of his choice between Kearney and Yankton but picked Yankton as being more likely. He was awarded a score of 6 for marking Yankton with 3 points.

NOTE: The penalty for using too many or too few marks will be calculated by the computer. The scoring formula used in the four-alternative case is

$$-6.608 + 16.609 \log_{10} (r_h)$$

r_h is found by taking the ratio of the number of points given the correct answer h and the total number of points allocated over all alternatives for the particular item being scored. If r_h is less than or equal to .01, the score is -23.217.

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1	- 2	5	10
2	3	omit	0
3	6		

Be sure you blacken each mark completely. If you decide to change a mark, erase completely. Poorly erased marks may be read as answers.

Example 3

Who was the commander of the Union forces at the battle of Gettysburg?

(A) Grant
(B) Hooker
(C) Meade
(D) Burnside

Answer Sheet

	A	B	C	D	E
9.					
10.	■				
11.		■			
12.		■			

The person who answered this question knew Grant was commanding the Union forces in the west at this time so he could be eliminated. He had heard the other three names but could not associate them with Gettysburg. He gave Burnside and Meade each two points and Hooker one. He scored 3 having placed two points on Meade, the correct answer.

Example 4

The capital of Illinois is

(A) Chicago
(B) Springfield
(C) Rantoul
(D) Decatur

Answer Sheet

	A	B	C	D	E
13.				■	
14.	■				
15.					
16.					

The person who answered this question thought Chicago was the state capital but had some feeling for Springfield. He gave Chicago four points and Springfield one. Since Springfield was correct he receives a score of -2 but that is better than the score of -23 he would have received had he placed all his confidence on alternative (A).

THE SCORE IS PLANNED SO THAT YOU WILL DO BEST IF YOU INDICATE YOUR BELIEFS ACCURATELY. DO NOT GIVE AN ALTERNATIVE MORE POINTS THAN YOU THINK YOU SHOULD OR LESS THAN YOU THINK YOU SHOULD.

Directions for Students Using Distribute 100 Points Confidence Testing-Machine Scoring

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READ THE FOLLOWING EXAMPLES CAREFULLY BEFORE BEGINNING.

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Example 1

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(A) state
(B) city
(C) country
(D) village

Answer Sheet

	A	B	C	D	E
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3.					
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In the above example the subject was very sure, certain in fact, that the answer he marked was correct. He was right and so received 10 points.

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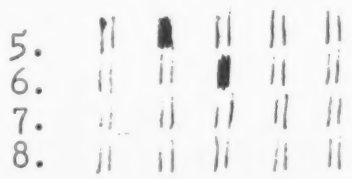

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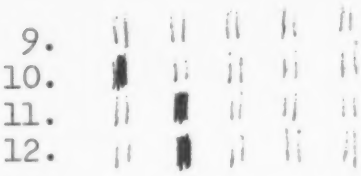

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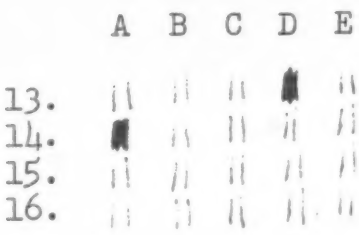

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